a filter that filters said low-level ultra-wideband signal to define a center frequency thereof and to produce a filtered low-level ultra-wideband signal;

an antenna responsive to said filter to radiate a signal representing said ultra-wideband signal; and

a receiver for receiving said radiated ultra-wideband signal.

2. (Amended) A communication system utilizing an ultra-wideband transmitter, said system comprising:

a switched impulse generator including one of an impulse-excited oscillator and a UWB impulse generator to generate a low-level [waveform adaptive] ultra-wideband signal;

a waveform adapter responsive to said impulse generator;

an antenna responsive to said waveform adapter to radiate a representation of said ultra-wideband signal; and

a receiver for receiving said radiated ultra-wideband signal.

3. (Amended) A method for detecting an object utilizing ultra-wideband transmitting techniques, said method comprising:

generating a switched impulse, low-level ultra-wideband signal;

waveform adapting said switched impulse, low-level ultra-wideband signal;

radiating upon said object a signal representing said waveform-adapted, ultra-wideband signal; and

receiving an echo of said radiated, waveform adapted, ultra-wideband signal thereby to detect said object.

4. (Amended) A waveform adaptive ultra-wideband transmitter comprising:

a signal generator to generate a series of discrete low-level ultra-wideband signals having a selectable carrier frequency;

a waveform adapter responsive to said low-level ultra-wideband signals and including at least one of a bandpass filter, a mixer, a pulse shaper, and an attenuator that controls one of frequency, pulse shape, bandwidth, phase, multi-level amplitude, and multi-level attenuation of said low-level ultra-wideband signals, said waveform adapter controlling said low-level ultra-wideband signal on a dynamic, real-time basis; and

an antenna responsive to said waveform adapter to radiate ultra-wideband signals.

5. (Cancelled)

6. (New) The range measuring device as recited in claim 1, wherein said receiver comprises at least one tunnel diode responsive to an echo pulse.

7. (New) The range measuring device as recited in claim 1, further comprising an amplifier that amplifies said ultra-wideband signal.

8. (New) The range measuring device of claim 7, wherein said filter comprises one of a band-pass filter and a pulse shaper.

9. (New) The range measuring device of claim 8, wherein said filter defines a bandwidth of the signal radiated by the antenna.

10. (New) The range measuring device of claim 1, wherein the receiver includes:

a variable attenuator coupled to a receiving antenna; and

a detector to detect an output of said variable attenuator.

11. (New) The range measuring device of claim 10, wherein said detector comprises a tunnel diode.

12. (New) The range measuring device of claim 10, further including a controller that controls the variable attenuator to enable the detector to discriminate between noise and range measuring signals.

13. (New) The range measuring device of claim 12, wherein said controller utilizes a bit error rate to discriminate between noise and range measuring signals.

14. (New) The communication system as recited in claim 2, wherein said receiver comprises a tunnel diode to detect said ultra-wideband signals.

15. (New) The communication system as recited in claim 2, further comprising an amplifier interposed between said waveform adapter and antenna to amplify said ultra-wideband signal.

16. (New) The communication system as recited in claim 15, wherein said waveform adapter comprises one of a band-pass filter and a pulse shaper.

17. (New) The communication system as recited in claim 2, wherein the receiver includes:

a variable attenuator coupled to a receiving antenna; and

a detector to detect an output of said variable attenuator.

18. (New) The communication system as recited in claim 17, wherein said detector comprises a tunnel diode.

A2 cont

19. (New) The communication system as recited in claim 17, further including a controller that controls the variable attenuator to enable the detector to discriminate between noise and information signals.

20. (New) The communication system as recited in claim 19, wherein said controller utilizes a bit error rate to discriminate between noise and information signals.

Sub B4

21. (New) The method of claim 3, further comprising the step of providing a tunnel diode to receive the echo.

22. (New) The method of claim 3, further comprising, prior to said radiating step, amplifying said switched impulse, low-level ultra-wideband signal.

Sub D2

23. (New) The method of claim 22, wherein said waveform adapting comprise one of bandpass filtering and pulse shaping of said switched impulse, low-level ultra-wideband signal.

24. (New) The method of claim 23, further comprising the step of defining a bandwidth of the signal radiated upon the object.

Sub B3

25. (New) The method of claim 3, further comprising, in the receiving step:

variably attenuating the echo; and

detecting a signal produced by the echo after said variably attenuating.

A7 Cont

26. (New) The method of claim 25, further including providing a tunnel diode to detect the echo.

27. (New) The method of claim 25, further including variably attenuating the echo to enable discrimination between noise and signals representing the echo.

28. (New) The method of claim 27, including utilizing bit error rate to discriminate between noise and signals representing the echo.